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13   NORTHERN DISTRICT OF CALIFORNIA

14   SAN FRANCISCO DIVISION

15
   ORACLE AMERICA, INC.,   Case No. 3:10-cv-03561 WHA (DMR)
16
              Plaintiffs,
17   CORRECTED EXHIBIT F TO
         v.   DECLARATION OF EDWARD A. BAYLEY
18   IN SUPPORT OF GOOGLE INC.'S
   GOOGLE INC.,   MOTIONS IN LIMINE NOS. 1-6.
19   PART 3 OF 5
              Defendant.
20
                                            Hearing: April 27, 2016
21   Dept.   Courtroom 8, 19th Fl.
                                            Judge: Hon. William Alsup
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   CORRECTED EXHIBIT F TO DECLARATION OF EDWARD A. BAYLEY IN SUPPORT OF GOOGLE
          INC.'S MOTIONS IN LIMINE NOS. 1-6. PART 3 OF 5
                      Case No. 3:10-cv-03561 WHA (DMR)
964206.01

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"[t]hey fear an open source J2ME alternative will over time take the money out of the market for them."[383]

- On October 11, 2005, Mr. Rubin passed on Alan Brenner's (a Sun executive) concerns that an open source "J2ME VM" will make "licensing enforceability impossible for Sun, causing a loss of revenue."[384]

- In 2006, Jonathan Schwartz spoke with Sergey Brin who acknowledged that he understood an open source Java ME would have a "severely negative impact on our [Sun's] revenue streams."[385]

- Also in 2006, Sun's Scott McNealy told Mr. Schmidt that Sun's revenue would decline as a result of Android and that while Sun was willing to take a risk with Java to do an Android deal with Google, "the economics of the Android impact and deal would need to be understood."[386]

- Even after negotiations broke down, Google employees indicated that a licensing arrangement between Sun and Google was important to protecting Sun's licensing business as Sun's entire business model would collapse "[I]f Apache or anyone else develops Java code that the rest of us can use freely instead of paying money to Sun…"[387]

- Jeet Kaul, a former Sun employee, testified in deposition that Sun could lose "a billion dollars" based on projections of $250 to $300 million per year in annual Java revenue over three to four years.[388]

182. Sun/Oracle's lost profits are further supported by the field-of-use ("FOU") restrictions in Sun's SE and ME licenses which were designed to protect Sun's commercial license revenues.[389] To that point, Google understood that its use of the Apache Harmony Java SE libraries in Android violated the FOU restrictions in the licenses,[390] and the potential loss of those FOU restrictions was projected by Sun to result in a 25% annual drop in licensing revenue (from 2009 through 2011).[391] Furthermore, according to Sun's Dave Bryant, abandoning the FOU restrictions without any counteraction was seen as tantamount to falling "off the cliff."[392]

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[383] GOOGLE-12-00044903; GOOGLE-01-00017143 – 144 at 143.
[384] GOOGLE-01-00019527 – 528 at 527-528.
[385] OAGOOGLE0013996761 – 762 at 761.
[386] GOOGLE-01-00065655.
[387] GOOGLE-14-00024408 – 409 at 408.
[388] Deposition of Jeet Kaul, August 5, 2011, at p. 106.
[389] GOOGLE-27-00002479; GOOGLE-40-00031156; Deposition of Jonathan Schwartz, July 20, 2011 at pp. 82 – 83.
[390] Deposition of Eric Schmidt, August 23, 2011, pp. 137-138, 152-155.
[391] OAGOOGLE0000453751 – 752 at 752.
[392] OAGOOGLE0000453751 – 752 at 752.

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183.   I have concluded from my review of Sun's business model at the time and the contemporaneous business records, including actual discussions between Sun and Google, that the fact of a loss to Sun in Java ME licensing revenue as a consequence of a Java-based Google open source platform for mobile phones was well known and accepted by both parties.

10.1.1   Quantification of Lost Java ME Revenues

184.   I have also concluded that the amount of this loss can be quantified with a reasonable certainty. Both Sun and Oracle created projections for Java ME licensing revenue. Over time, the impact of Google's infringement on the projections increased. As such, the projections were reduced several times to reflect ongoing declines in actual Java ME licensing revenue resulting from, for example, Oracle's inability to renew a number of Java ME licenses with Android OEM's such as HTC, LG, and ZTE.[393]

185.   Around 2006, Sun announced that it would alter its approach to licensing and subsequently began offering a public license. However, I understand that most of Sun's existing ME commercial licensees declined to accept the open source license, as they wanted to keep their respective proprietary Java ME improvements, enhancements, and changes.[394] Under the new licensing approach, any modifications and improvements created by the licensee would face the risk of becoming non-proprietary due to the contribution-back requirements of the open source license.[395] So, although the new license structure could have had the potential of limiting future Java ME licensing revenue and expanding other Sun opportunities, it was not widely accepted by the community and thus does not appear to have had a material effect on Sun's business. Sun's licensees continued to pay Java ME license royalties and fees, at least until Android entered and then dominated the market, at which point many licensees chose not to renew their Java ME licenses.[396] Notably, although the assumptions changed after the advent of Android, and thus expected results from the forecasts were lowered, Oracle still failed to meet those lowered expectations.

10.1.2   Java ME Projected Licensing Revenue

186.   Several contemporaneous business records reflecting projected Java ME licensing revenue have been produced in connection with this matter.[397] Sun's Strategic Forecast created in 2008

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[393] Deposition of Michael Ringhofer, December 2, 2015, pp. 76-77.

[394] Deposition of Donald Smith, November 20, 2015, pp. 12-13, 26, 37, 78. Deposition of Michael Ringhofer, December 2, 2015, pp. 215-216. Deposition of Eric Chu, April 8, 2011, pp. 159-161. Deposition of Alan Brenner, December 15, 2015, pp. 204-207.

[395] Deposition of Donald Smith, November 20, 2015, pp. 12-13, 26, 37, 78. Deposition of Michael Ringhofer, December 2, 2015, pp. 215-216.

[396] Deposition of Michael Ringhofer, December 2, 2015, pp. 38-39, 76-77.

[397] The projections are for fiscal years which I understand runs from June 1 through May 31. For simplicity I simply state "2015"; however, this denotes data from June 1, 2015 through May 31, 2016.

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projected Java ME licensing revenue for 2009 and 2010 of $129.7 million and $140.4 million.[398] The notes to the forecast list "major shift to open source" as a consideration[399] and the forecast includes projections labeled "high," "mid," "low" and "strategic." My analysis of Java ME licensing revenue considers the projection labeled "strategic" as I believe this projection is most in line with the business strategy given what was known at the time.[400]

187.   I note that the projections reflected in the Strategic Forecast are supported by an October 2008 presentation titled Java in Wireless Business Review which includes four scenarios of Java ME revenue forecasts.[401] The "Best Estimate" forecast included in the Business Review projects Java ME revenue of $110.3 million in 2009 and $138.1 million in 2010, and is believed to be less encumbered by the existence of Android than the remaining scenarios which reflect lower projections.[402] Use of the "Best Estimate" in this alternative forecast would result in much greater damages than I have calculated because the growth rate from 2009 to 2010 in the "Best Estimate" is greater than the 8% reflected in the Strategic Forecast.[403]

188.   Prior to the creation of each forecast, Sun was aware of the threat posed by Android to its business. For example, a December 10th, 2007 document titled Mobile: End + End, Shifting focus & monetization in the 'post Android' era states "Java ME under attack" and goes on to state "the most concerning of all is the combination of Android's Dalvik VM + Linux."[404] It goes on to indicate: "given their resources, Google will outspend and underprice us,"[405] in reference to the free price of Android, which was central to Sun's declining expectations for Java ME licensing. Notably, Sun had experienced consistent monetization principles for over 15 years.[406]

189.   For the purpose of my analysis, I have conservatively considered Sun's 2008 forecast of Java ME licensing revenues to represent the best indication of Sun's *but-for* revenue, despite the fact that it

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[398] OAGOOGLE0100164541.

[399] OAGOOGLE0100164541 at p. 5.

[400] OAGOOGLE0100164541 at p. 3. Discussions with Michael Ringhofer.

[401] OAGOOGLE0000142142 – 176 at slides 28 – 31.

[402] OAGOOGLE0000142142 – 176 at slides 28 – 31. I note the second scenario decreases 2010 forecast revenue to $123.5 million and specifically states that "competing technologies (Symbian, Android) provide operators with credible alternatives to Java" and although the third and fourth scenarios do not explicitly mention competing technologies they reflect revenues which are lower than scenario three. I also consider Java ME licensing projections prepared in later years to be less reflective of Sun's but-for licensing revenues because they increasingly account for the impact of competition with Android resulting from Google's infringement.

[403] Applying the same methodology I use in my calculation of Java ME licensing lost profits based on the "Best Estimate" would result in lost profits of approximately $900 million.

[404] OAGOOGLE0009784791-800, at 795.

[405] OAGOOGLE0009784791–800, at 795.

[406] Deposition of Vineet Gupta, July 26, 2011, at p. 76.

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was reduced in response to Google's infringement and no-cost pricing.[407] Although Sun's 2008 projections only include expectations for Java ME licensing revenue for complete fiscal years 2009 and 2010, I have relied on the 8.3% revenue growth rate across those two years to project ME licensing revenues through 2015.[408] I note my assumption is reasonable when compared to the fact that Sun projected overall Java billings growth from 2009 to 2014 of 8.0 percent to 13.6 percent[409] and, prior to the commencement of Google's infringement, Java ME licensing billings grew 75% from 2005 to 2006 and 22% from 2006 to 2007.[410] **Figure 23** reflects Java ME licensing revenue projections over the period 2009 to 2015. As seen in **Figure 23**, over that period, Sun expected to earn approximately $1.17 billion from licensing Java ME over that period.

Figure 23

Summary of Forecasted Java ME Licensing Revenue[411]

	2009	2010	2011	2012
Total Forecasted Licensing Revenue	$ 129,696,000	$ 140,399,000	$ 151,985,252	$ 164,527,644

	2013	2014	2015	Total
Total Forecasted Licensing Revenue	$ 178,105,082	$ 192,802,981	$ 208,713,806	$1,166,229,765

10.1.3   Sun & Oracle's Actual Java ME Revenue

190.   Sun/Oracle's actual Java ME licensing revenue has been significantly less than what was forecasted even in 2008. By 2010, Sprint, Verizon, AT&T and T-Mobile had decreased their investment in Java ME in favor of Android.[412] Furthermore, a Sun FY2011 Java ME strategic overview for FY 2011 indicated that Android would "eliminate" more than $45 million, or close to 50% of Java ME, in the subsequent eighteen months.[413]

191.   As seen in **Figure 24**, Sun/Oracle's actual Java ME licensing revenues steadily increased over the years 2009 – 2012, before beginning to significantly decline in 2013.[414] One reason for the increase before 2013 is that Oracle's Java ME licensing revenues for 2011 and 2012 reflect pre-

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[407] OAGOOGLE0009707202 – 205 at 202-203.

[408] Exhibit 12.3.

[409] Exhibit 12.8.

[410] Exhibit 12.10.

[411] Exhibit 12.3.

[412] OAGOOGLE0000799926.

[413] OAGOOGLE0000457616-617, at 617.

[414] Exhibit 12.2.

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payments for large license deals.[415] That fact, coupled with the lack of renewals in later years, explains why Java ME licensing revenue showed increases up to the year 2013. ▮▮▮▮

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Figure 24

Summary of Actual Java ME Revenue[417]

	2009	2010	2011	2012
Total Java ME Licensing Revenue	$ 96,951,229	$ 100,657,682	$ 123,610,000	$ 150,198,000

	2013	2014	2015	Total
Total Java ME Licensing Revenue	$ 86,754,824	$ ▮▮▮▮	$ ▮▮▮▮	$ 608,568,092

192.   As seen above, Sun and Oracle earned $608,568,092 from Java ME licensing from 2009 to 2015.[418] Compared to the projected $1.17 billion Java ME licensing revenue for the same time period, Oracle fell significantly short of its forecasts.

10.1.4   Lost Java ME Revenue

193.   I have calculated Oracle's lost Java ME revenue by comparing the amount of revenue that was forecasted to the amount of revenue that was actually earned. As seen in **Figure 25**, based on that analysis, I have quantified lost Java ME licensing revenue to be approximately $557.7 million. [419] I note that such a claim for lost Java ME revenue is consistent with Michael Ringhofer's testimony ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮[420]

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[415] Conversations with Michael Ringhofer and Edward Senteno.
[416] Deposition of Michael Ringhofer, December 2, 2015, pp. 68-69.
[417] Exhibit 12.4.
[418] Exhibit 12.4.
[419] Exhibit 12.2.
[420] Deposition of Michael Ringhofer, December 2, 2015, pp. 38-39.

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Figure 25

Summary of Java ME Lost Revenues[421]

	2009	2010	2011	2012
Forecasted Java ME Licensing Revenue	$ 129,696,000	$ 140,399,000	$ 151,985,252	$ 164,527,644
Java ME Licensing Revenue	96,951,229	100,657,682	123,610,000	150,198,000
Lost Java ME Licensing Revenue	32,744,771	39,741,318	28,375,252	14,329,644

	2013	2014	2015	Total
Forecasted Java ME Licensing Revenue	$ 178,105,082	$ ▮▮▮▮	▮ ▮▮▮▮	$ 1,166,229,765
Java ME Licensing Revenue	86,754,824	▮▮▮▮	▮▮▮▮	608,568,092
Lost Java ME Licensing Revenue	91,350,258	▮▮▮▮	▮▮▮▮	557,661,673

10.1.5   Java ME Incremental Costs

194.   In connection with determining the amount of lost profits associated with the Java ME lost revenue discussed above, I have considered the appropriate amount and type of incremental expenses to deduct from those lost revenues. My analyses in that regard are discussed in the sections that follow.

Oracle Incremental Costs

195.   I understand Oracle does not maintain costs and expenses that are specific to Java ME. Rather, I understand ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮[422] Therefore, I have relied on Oracle's overall Java profit and loss statements to determine the appropriate amount of incremental expense to deduct from Oracle's lost Java ME licensing revenue.

196.   In the course of making that determination, I considered a source of Java cost information reflecting Java licensing expenses for 2010 – 2015, which ranged from ▮▮▮▮▮ to ▮▮▮▮▮.[423] With regard to the type of expenses included in the costs reflected on the document, I understand Oracle's Java Finance Controller, Mr. Edward Senteno, testified that ▮▮▮▮ ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ ▮▮▮▮▮▮

197.   In addition to the document discussed above, I have also reviewed a Java P&L statement for 2013 - 2015. While the overall revenue and cost information reflected in that document is the

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[421] Exhibit 12.2

[422] Deposition of Edward Senteno, November 18, 2015, at 61.

[423] Exhibit 12.1.

[424] Deposition of Edward Senteno, November 18, 2015, at 42.

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same as the 2010 - 2015 document, it contains additional detail pertaining to the specific expense categories considered in the analysis.[425] The specific cost categories reflected on the P&L statements include employee-related expenses, marketing communications, facilities, and professional and recruiting fees. I understand that ███████████████████████████ ██.[426]

198. Based on my discussions with Mr. Senteno, I understand all of the costs in the 2011-2015 document were necessary to complete a sale of a Java ME license. Therefore, I have considered all of those expenses to be incremental. A summary of Oracle's incremental Java licensing expenses can be seen in **Figure 26.**

Figure 26

Summary of Oracle's Incremental Java Licensing Expenses[427]

	2011	2012	2013	2014	2015	Total
Java Licensing Revenue	$ 250,194,000	$ 285,100,000	$ 316,061,000			$1,206,852,706
Java Licensing Expense	25,061,042	27,947,000	30,037,000			139,812,476
Expense as a % of Revenue	10.0%	9.8%	9.5%			11.6%

Sun Incremental Costs

199. A Sun FY07 MEP Business Presentation includes a 2006 Java ME profit & loss statement.[428] This profit and loss statement identifies COGS, engineering, marketing and sales expenses for all four quarters of 2006. ██████████████████████████████████████ ██████████████████████████.[429] I also consider sales expense to be incremental because it is a consistent 10% of revenue for each quarter. With regard to Engineering and Marketing expense, I do not consider either to be incremental as they have no apparent relationship to sales. To that point, I note that not only do quarterly marketing expenses not fluctuate with revenue, they even declined as revenue increased from Q3 to Q4.[430]

200. While the 2006 P&L statement predates the damages time period, more current P&L data for Java ME has not been produced. Thus, I believe the 2006 P&L data provides a reasonable approximation of the incremental expenses Sun would have incurred to achieve the lost Java ME licensing revenues in 2009 and 2010. My belief in that regard is supported by a Sun October 2009 "SMI Operations Review" presentation that includes an overall Java P&L which indicates

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[425] Exhibit 12.9.
[426] Deposition of Edward Senteno, November 18, 2015, at 125.
[427] Exhibit 12.6.
[428] OAGOOGLE0005039944 - 962, at 946.
[429] Exhibit 12.7.
[430] Exhibit 12.7.

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actual COGS of 8.6 percent of revenue for 2008, and projected COGS as a percentage of revenue of 11.6 percent and 10.7 percent of revenue for 2009 and 2010.[431]

201.   Therefore, based on the 2006 Java ME profit & loss statement included in the Sun FY07 MEP Business Presentation, I have considered Sun's incremental Java ME licensing expenses to be 17.6 percent of sales during the years 2009 and 2010 (7.6 percent COGS and 10 percent selling expense).

Total Incremental Costs

202.   As discussed in the previous sections, I have considered the incremental expenses related to Java ME licensing to range from 9.5 percent to 17.6 percent. Therefore, to approximate the amount of incremental expenses associated with the lost Java ME licensing revenues I have multiplied those incremental cost percentages by the amount of lost licensing revenue. A summary of my incremental expense calculations is reflected in **Figure 27**.

Figure 27

Summary of Java ME Licensing Incremental Expenses[432]

	2009	2010	2011	2012
Lost Java ME Licensing Revenue	$ 32,744,771	$ 39,741,318	$ 28,375,252	$ 14,329,644

	2013	2014	2015	Total
Lost Java ME Licensing Revenue	$ 91,350,258	$		$ 557,661,673

10.1.6   Java ME Licensing Lost Profits

203.   To determine Oracle's lost profits relating to Java ME licensing, I have subtracted the incremental expenses from the lost revenues discussed in the previous sections. Based on those calculations, I have determined that Oracle's lost profits relating to Java ME licensing equal approximately $▮▮▮▮▮▮ A summary of my calculation can be found in **Figure 28**.

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[431] OAGOOGLE0003973858 – 954 at 910.
[432] Exhibit 12.1.

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Figure 28

Java ME Licensing Lost Profits[433]

	2009	2010	2011	2012
Lost Java ME Licensing Revenue	$ 32,744,771	$ 39,741,318	$ 28,375,252	$ 14,329,644

	2013	2014	2015	Total
Lost Java ME Licensing Revenue	$ 91,350,258	$ ▇▇▇▇▇▇	▇ ▇▇▇▇▇	$ 557,661,673

10.2   Java FX Mobile ("Acadia")

204.   In addition to evaluating Oracle's lost profits relating to Java ME, I have also considered the negative impact of Android on Oracle's ability to launch project Acadia. In the first half of 2007, Sun undertook a project to develop a Java-Linux full software stack mobile platform named Java FX Mobile. The project was assigned code name "Acadia."[434] Acadia had been in the planning stages since at least January 2006 when Sun considered acquiring SavaJe Technologies, Inc., a startup that was developing a Java/Linux-based full mobile stack. The SavaJe mobile platform was similar to Android – a Linux based system including middleware and an application development environment,[435] and Sun's motivation for considering the acquisition was the opportunity to grow "mobile embedded revenue by offering a complete, integrated vertical phone stack that will enable Sun to provide more value to handset manufacturers thus enabling increased per unit device royalties."[436]

205.   Sun ultimately acquired SavaJe in April 2007 for $13 million.[437] In a public announcement discussing the acquisition, Sun described SavaJe as a "highly customizable, integratable phone solution centered on Java" that would "strongly contribute to Sun's future competitive position

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[433] Exhibit 12.

[434] OAGOOGLE0000337463. The full stack project was part of a larger Java FX strategy at Sun. When Sun chose not to offer the full stack, it used the Java FX Mobile name for a UI layer.

[435] OAGOOGLE0000337463; OAGOOGLE0002304235; OAGOOGLE0002304236 – 243 at 237; 242 – 243; OAGOOGLE0000361417 – 418 at 417; OAGOOGLE0001700059 – 061 at 061.

[436] OAGOOGLE0000337463; OAGOOGLE0002304235; OAGOOGLE0002304236 – 243 at 237; 242 – 243; OAGOOGLE0000361417 – 418 at 417; OAGOOGLE0001700059 – 061 at 061.

[437] OAGOOGLE0006231006 – 033 at 025; OAGOOGLE0000473609 – 612; OAGOOGLE0000424812 – 813 at 812.

in the mobile technology market."[438]   Sun's Brian Sutphin believed that SavaJe's technology could become "one of the premier mobile platforms in the industry," now that it was a part of Sun.[439] In addition to the Java/Linux-based mobile platform, Sun also acquired skilled engineers and intellectual property resources that, combined with Sun's expertise, enabled it to efficiently develop a Java/Linux-based mobile platform.[440]

206.   The "Development Timeline" for Acadia specified R&D efforts beginning in 2007 and an October 2008 deployment.[441] Sun's relatively quick plan to use the SavaJe technology in combination with Java ME and Java Mobile FX to create a mobile platform is supported by the fact that the developer community was largely trained to code in the Java platform. Furthermore, Mr. Gupta testified that "a lot of [our] customers did not expect Android would work and they wanted to continue working with Java."[442] Mr. Gupta further testified that the Java FX mobile strategy included adding scripting language support for easy UI (user interface) development into the platform, which is a direction Android was trying to go as well.[443]

207.   During the time that Sun was developing Acadia, it was also going through a companywide restructuring. Although Acadia was considered in the restructuring, the team focused on executing Acadia was unaffected. An internal Sun email sent in November 2008 indicates that the Sun layoffs were "going after simplifying the field and our processes, to get to industry benchmark productivity" and that Sun was "NOT [sic] making wholesale changes to our technology roadmap or skillset."[444] The majority of the layoffs associated with the restructuring took place more than a year after Project Acadia commenced and were not directly related to the project or its team.

208.   Acadia was based on a combination of Java ME and Java FX Mobile and was aimed at the smartphone market, which was beginning to emerge at the time. As such, Acadia was positioned to compete with other mobile platforms such as Symbian, BlackBerry, iOS and Android (assuming it existed without Google's infringement).

209.   Sun's efforts to develop its own complete Java/Linux mobile platform were strategic and described as a key marketing strategy to OEMs.[445] Just like Google, in 2006 Sun realized that it

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[438] OAGOOGLE0006231006 – 033 at 25; OAGOOGLE0000473609 - 612; OAGOOGLE0000424812 – 813 at 812.

[439] OAGOOGLE010016779.

[440] OAGOOGLE0004950038-063 at 054; OAGOOGLE0000345591; OAGOOGLE0009694914 – 915.

[441] OAGOOGLE0004950038-063 at 054; OAGOOGLE0000345591; The Development Timeline is consistent with other documentary evidence. One document indicates that the first devices should be shipped in mid-2008 (Fiscal Year 2009) in time for the 2008 holiday shopping season, OAGOOGLE0009694914 – 915 at 914.

[442] Deposition of Vineet Gupta, July 26, 2011, pp. 135-136.

[443] Deposition of Vineet Gupta, July 26, 2011 p. 371.

[444] OAGOOGLE0003900673 – 674 at 673.

[445] OAGOOGLE0004936380 – 436 at 396.

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needed to release a smartphone product soon, or it could "miss [the] market window."[446] Therefore, Sun made a concerted effort to partner with both OEMs and carriers in an attempt to get a product to market by October 2008 – the same month Google launched Android.[447]   By the middle of 2007, Sun had met with wireless carriers such as AT&T, Verizon, Sprint, Vodafone and Orange (France), with AT&T and Vodafone exhibiting the greatest interest.[448] The OEMs solicited by Google included Samsung, LG, Motorola, Nokia, Sony Ericsson and UT Starcomm.[449]

210.   Although Sun's development of a mobile platform occurred with the knowledge that Google was working on its own competitive platform, prior to the release of Android Sun did not know how similar Android was to Acadia.[450] That said, an internal Google email noted the similarity of Android to SavaJe, because the phone applications in both platforms were Java apps.[451] Furthermore, it appears Google was aware of Sun's development efforts as early as May of 2007, when Mr. Rubin stated that he anticipated Sun announcing a mobile platform in the coming week.[452]

211.   In November 2007, Omer Pomerantz of Sun wrote that the Android SDK "is very similar (almost identical) to the Savaje stack/vision…Will Sun see royalties from every 'Android' device? (it's Java inside, but uses this 'DEX' format…)"[453] Android's similarity to Acadia and no-cost pricing was also discussed by Sun in a January 2008 call to update forecasts as a result of Android's impact on Sun's diminishing royalties.[454] In addition to OEMs backing out of potential Acadia partnerships, Sun also realized that even if OEMs went with Android and failed, it would be "locked out for 2 years."[455] Finally, Martin Lister of Sun realized that a free-of-charge Android system backed by Google could not be matched by Sun.[456]

212.   Although Sun recognized that Android was no-cost, Sun did not know that, in fact, Google was sharing ad and application revenue with carriers and OEMs to gain distribution. Therefore, Sun was competing with "paid off" not "free of charge." That is, Sun was trying to charge a license fee to OEMs who could instead pay nothing at all for the software and in addition receive large market distribution payments. As a result, ███████████████████████████

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[446] OAGOOGLE0004936380 – 436 at 404.

[447] OAGOOGLE0005117411 – 419 at 414.

[448] OAGOOGLE0009694914 – 915 at 914.

[449] OAGOOGLE0009694914 – 915 at 915.

[450] OAGOOGLE0002546260.

[451] GOOGLE-17-00063063.

[452] GOOGLE-26-00005730.

[453] OAGOOGLE0002546260.

[454] OAGOOGLE0009707202 – 205 at 202-203.

[455] OAGOOGLE0000387642 – 647 at 643; OAGOOGLE0002778476 – 482 at 477.

[456] OAGOOGLE0000488495 – 497 at 495 - 497.

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213.   Ultimately, by 2009 Project Acadia was cancelled.[458]   Sun abandoned the project following the release of Android, which provided too great a barrier to entry. As discussed by Oracle's Larry Ellison during his deposition, ██

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████████[459]

214.   Furthermore, Mr. Gupta provided the following testimony in his deposition regarding the overlap of Android on Sun's mobile strategy:

> *"Our roadmap of where we were going with Java, their roadmap of what they were doing with Android, at several levels would compete. It would compete in the level of cost. It would compete in the level of somebody who had a full ecosystem, developer content, ISE, application against ours. Ours was more open. Their's was seemingly open because of the freeness attached to it. Ours had encumbrances, both legal, community process requirements, requirements of not duplicating efforts. Their's, do what you want. So there were several levels of issues that it would cause in the ecosystem between our strategy and their's.*
>
> ...
>
> *What -- the statement should be is both of us had exactly the same plans and same strategies for the same market with exactly the same developers and community. We were just executing them separately. So everything overlapped. And these are words from Andy Rubin himself as well."[460]*

215.   The amount of losses attributable to the loss of the Acadia platform is very difficult to quantify since the product never achieved distribution agreements nor launched.   In my view it is reasonable to consider that, in the absence of Google's infringement of the Java Copyrights, Acadia had the opportunity to capture a material portion of the mobile platform market. The value proposition of Acadia and Android was the same—a full stack mobile platform based on Java and Linux. Acadia was poised to capitalize on the Java developer base in the same way as Android. Acadia was poised to capitalize on the market window for mobile in the same way as Android. Acadia was poised to capitalize on the increasing technical capabilities of phone devices as was Android. And Sun had lengthy experience managing dual licensing schemes.

216.   Had Google been delayed for a significant period in its entry to market by having to develop its own APIs rather than using the 37 Java APIs from the Java Copyrights, it is possible that Acadia

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[457] Deposition of Georges Saab, December 16, 2015 at, pp. 68-69; Deposition of Michael Ringhofer, December 2, 2015, at pp.69-70.

[458] OAGOOGLE0000489218 – 219 at 218; OAGOOGLE0000653841.

[459] Deposition of Larry Ellison, August 12, 2011, pp. 63-64.

[460] Deposition of Vineet Gupta, July 26, 2011, pp. 371-373.

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could have captured the Java-based smartphone field. ███████████████████

██

██ [461]

217.   Therefore, I believe Sun and later Oracle's actual losses attributable to the lost Acadia opportunity could be quite significant, and, potentially best measured by the apportioned Android profits attributable to the Infringed Java Copyrights. In other words, Google's Android-related profits represent, in some part, Sun and Oracle's inability to pursue the exact same market opportunity for a Linux/Java SE based smartphone because Google was competing against them using their own Java Copyrights.

10.3   Other Actual Losses

218.   It should also be noted that my calculation of Oracle's losses is conservative in that it does not reflect additional losses claimed by Oracle which stem from Google's improper use of the Infringed Java Copyrights. To that point, I understand Oracle's efforts to license Java for a variety of devices including, but not necessarily limited to, wearables, automotive, televisions, media players, game consoles, web browsers, and household appliances have all been hindered by competition from Android.[462]

11.   GOOGLE'S PROFITS ATTRIBUTABLE TO THE INFRINGEMENT

11.1   Causal Nexus for the Revenues Attributable to the Infringement

219.   As discussed above, I understand Oracle is entitled to any profits generated by Google which are attributable to the infringement and not taken into account in computing its actual damages. My evaluation of Google's profits begins with the identification and evaluation of the revenues Google derived from the infringement of the Java Copyrights.[463] To that point, I understand that under §504(b), a "causal nexus" between the infringement and the monetary remedy sought is a predicate to the recovery of infringer's profits.[464]

220.   I am qualified to evaluate the causal connection between Google's revenues and the Infringed Java Copyrights based, in part, on my experience as a licensing professional who regularly assists clients with the valuation of intellectual property, both inside and outside of litigation. More specifically, I have experience negotiating licensing/sale agreements for intellectual property assets, the terms of which are predicated on identifying the specific economic benefits derived from the intellectual property being licensed. I am also qualified based on my experience as a

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[461] Deposition of Jonathan Gold, December 11, 2015, pp. 16-17.
[462] Oracle's First Supplemental Responses and Objections to Google's Seventh set of Interrogatories, pp. 1-3.
[463] Order Re Willfulness and Bifurcation, *Oracle America Inc. v. Google Inc.*, No. C 10-03561, September 18, 2015, p. 6.
[464] *Polar Bear Prods., Inc. v. Timex Corp.*, 384 F.3d 700, 708-09 (9th Cir.2004); *Brocade Communs. Sys. v. A10 Networks Inc.*, 2013 U.S. Dist. LEXIS 8113, *29-30 (N.D. Cal. Jan 10, 2013).)

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financial professional and Certified Public Accountant who regularly assists clients with the evaluation of potential businesses and markets that could possibly be created from the development and commercialization of intellectual property. Based on that experience and my review of the evidence produced in connection with this matter, as discussed in detail in the following sections, I have concluded that revenues derived by Google through the sale of hardware, apps, digital content and advertising have a causal nexus to the Infringed Java Copyrights. My opinions related to causal nexus herein include consideration of the totality of the evidence discussed herein.

221.   After identifying the sources of revenues which are causally connected to the Infringed Java Copyrights, I quantified those revenues based on the financial records and other data provided by Google.

222.   After quantifying the causally connected revenues, I subtracted the cost of sales and operating expenses that actually helped generate those revenues. Those costs and expenses were often reflected in contemporaneous business records prepared by Google to report periodic Android-related operating results to the Android Operating Committee and other Google executives. I would note that although Google has the burden to prove its claimed deductible expenses,[465] based on Google's business records and related deposition testimony, I believe I can accurately identify the costs and expenses incurred by Google in connection with generating the Android-related revenues discussed above.

11.1.1   Causal Nexus to the Java APIs

223.   The revenues causally connected to the Infringed Java Copyrights were identified, in part, based on Google's business records, the sworn testimony of Google witnesses, and the expert reports and opinions of other experts in this case. As discussed previously, Google implemented a four phase strategy for Android which was dependent upon the use of a "Leading Software Platform" to build an "Ecosystem."[466] In October 2007, then-Google CEO Eric Schmidt wrote to Google board of directors that Google's end goal is to "enable an open ecosystem for the mobile world and create a standard, open software platform for Java-based mobile software."[467] Mr. Schmidt advised that this goal "will take patience and many years of investment before it pays dividends."[468]

224.   A July 2005 Google presentation illustrated Google's early acknowledgement of the benefits and its need for the Java Platform.[469] To that point, I understand some of the specific benefits provided by the use of the Java Platform include at least the following:

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[465] 17 U.S.C. §504; Order Re Willfulness and Bifurcation, *Oracle America Inc. v. Google Inc.*, No. C 10-03561, September 18, 2015, p. 6.
[466] GOOGLE-21-00008118 – 139, at 131; GOOGLE-21-00008116 – 117.
[467] GOOGLE-26-00006035 – 6042, at 6038.
[468] GOOGLE-26-00006035 – 6042, at 6038.
[469] GOOGLE-00-00001772 – 781, at 779.

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- *Allows for Faster Programming*
- *Access to Java Developers*
- *Increased Speed to Market*
- *Lack of Available Alternatives*

225. ***Allows for Faster Programming:*** Similar to the other API packages included within the Java software platform, the 37 API packages avail "ready-to-use" programs that perform useful and robust computer functions without the need for developers to write code for these functions from scratch.[470] The use of the 37 API Packages by computer programmers thus save time and money when developing programs.

226. The familiarity of the set of APIs provided an advantage that Bornstein acknowledged when he said "it made sense to provide implementations of a set of classes with particular familiar names and methods with particular familiar names along with, you know, to the extent that we could, familiar behavior."[471] I understand that Anwar Ghuloum also agreed when he referred to the core libraries and said "Yeah. Familiarity, I think, would be a value."[472] Similarly, John Duimovich of IBM testified that familiarity with APIs helps improve developer performance.[473]

227. ***Access to Java Developers:*** The ease of use and familiarity of the 37 Java API packages act as incentives to attract Java programmers to the Android platform.   Bob Lee, head of Android's core library team at Google, agreed in his deposition that the 37 API packages included in Android "are [the] good stuff from Java."[474] Reto Meier, an Android developer advocate at Google since 2009, testified that Google copied the core Java APIs into Android instead of creating its own because "utilizing the same [Java APIs] would make it easier for folks to -- to use [Android] if they had experience with [the Java APIs]."[475]

228. This enabled Google to take advantage of a very large installed base of application developers already familiar with these APIs. This benefit was described by Mr. Rubin during his deposition. According to Mr. Rubin:

> *"So I think pretty consistently throughout the development of Android we referred — we really wanted to enable the third-party developer ecosystem in a way where the developers were using tools that they were familiar with. I didn't want to go invent some new thing that developers had to go to school to learn how to program; right, and as I mentioned earlier, a lot of college course work teach the Java*

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[470] Expert Report of Chris F. Kemerer, January 8, 2016, pp. 10-11.

[471] Deposition of Daniel Bornstein, May 16, 2011, p. 110.

[472] Deposition of Anwar Ghuloum, December 9, 2015, p. 18.

[473] Deposition of Anwar Ghuloum, December 9, 2015, p. 18; Deposition of John Duimovich, December 21, 2015, pp. 150-151.

[474] Deposition of Bob Lee, August 3, 2011, p. 48.

[475] Deposition of Reto Meier, December 11, 2015, p. 113.

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programming language. So Java as the programming language is really, really important to our solution because developers can just jump on it without learning something new and, in fact, going back to college. So I think that given the importance of ecosystems in the era of smart phones and app stores and everything else, that the Java programming language was really, really important to us.[476]

Mr. Bornstein reiterated this point when he said "well, so I think Android succeeded in providing a familiar enough environment for application developers to use"[477] and the "application developers use the familiarity in their head when they're – when they're working with Android"[478] Mr. Ghuloum agreed that familiarity with the 37 API packages would "allow[] programmers to more readily develop programs . . . ."[479]

229.   ***Increased Speed to Market:*** Because of their familiarity with the Java APIs, programmers are able to develop new programs and get products to market more quickly. Indeed, Google's incorporation of the 37 APIs significantly accelerated Google's own time to market with a platform that was robust and stable, thus enabling programmers to achieve that specific benefit of increased speed to market of their Android applications.

230.   Had Google opted to develop its own code, as opposed to using the 37 Java APIs, I understand it is reasonable to expect Google would have taken approximately 10 years for that code to reach maturity and stability.[480] I understand that maturity and stability of an API makes development much easier and predictable for application programmers using that platform. I further understand that Google did not have an extra 10 years to develop its own code. Google acquired Android by June 2005 and released its first Android API in November 2007, a schedule that disappointed Google's top executives. Google had bargained with Android Inc.'s principals for milestone payments designed to reach a release in three years. By November 2006, Google President and CEO Larry Page stated in an executive mobile strategy meeting that he was "[d]isappointed in Android's timing."[481] According to Mr. Rubin, "[s]o our desire was to use the Java programming language, accelerate our schedule and license the virtual machine from Sun. . . ."[482] Rubin explained to Google's Executive Management Group ("EMG") in a February 2006 presentation that a license from, or partnership with, Sun was "[c]ritical to [Google's] open source handset strategy" and would "[d]ramatically accelerate[] [Google's] schedule."[483]

[476] Deposition of Andrew Rubin, July 27, 2011, pp. 122-123.

[477] Deposition of Daniel Bornstein, May 16, 2011, p. 103.

[478] Deposition of Daniel Bornstein, May 16, 2011, p. 104.

[479] Deposition of Anwar Ghuloum, December 9, 2015, p. 18.

[480] Expert Report of Chris F. Kemerer, January 8, 2016, p. 35.

[481] Deposition of Larry Page, August 24, 2011, pp. 73-74; GOOGLE-26-0031099.

[482] Deposition of Andrew Rubin, July 27, 2011, p. 124.

[483] GOOGLE-12-00079182 – 194 at 186.

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231.   I also understand that, had Google chosen to make its own code offering for these 37 APIs, it likely would have suffered initially from errors and instability.[484]   Mr. Ghuloum indicated the problems inherent in unstable code when he said "Yeah, absolutely. We switched our runtime over, and there were growing pains associated with that."[485] Therefore, I understand that any code that Google independently developed in order to meet its two-year target for market introduction, would have risked disappointing (and perhaps alienating) developers and consumers alike. Copying the Infringing Java Copyrights therefore provided Google with the ability to meet its specific timing window with a stable and familiar API from the Java platform, thus capitalizing upon the same potential market opportunity that Sun lost with Acadia.[486]

232.   ***Lack of Available Alternatives:*** In addition to providing Google with the benefits described above, I also understand there were no commercially acceptable alternatives available to Google given its perceived market risks, other than to utilize the Infringed Java Copyrights as it did.

233.   As an example, I understand Google did in fact consider using Microsoft's C# language and the .NET framework as an alternative to Java, however, each of those alternatives is proprietary to Microsoft and would have necessitated a license between Google and Microsoft.[487]

234.   Although Google could also have attempted to use C++ this would not have offered a built-in developer base with as many programmers as the Java platform, and created portability issues which Java did not have.[488] Objective-C was also evaluated as an alternative but Mr. Ghuloum explained that it would have been difficult to gain developer acceptance since "Objective-C is a fairly idiosyncratic language … and clamped on this alternative syntax and alternative semantics, so I think there might have been a taste factor."[489] Finally, Google could have developed its own language, but it would be slow to develop and would not have a strong initial programmer base. Mr. Hasan Rizvi, Senior Vice President of Development for Oracle, testified that *"even a company like Google chose Java because they didn't want to go try and invent a new language. So coming up with a new language is a big deal."*[490] Further, *"Java is the most widely adopted platform in the history already; the most developers, the most devices, et cetera."*[491] Furthermore, Mr. Bornstein enumerated reasons for the preference of Java for Android as follows:

> *"[t]here was a good open source community around developers that use the Java programming language. There were good tools, such as Eclipse, that were other open source tools that worked with*

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[484] Expert Report of Chris F. Kemerer, January 8,2016, p. 33.

[485] Deposition of Anwar Ghuloum, December 9, 2015 at p. 150.

[486] Expert Report of Chris F. Kemerer, January 8, 2016, p. 35.

[487] Email between Andy Rubin and Larry Page, October 11, 2005, GOOGLE-01-00019527 – 528 at 528; Deposition of Andrew Rubin, April 5, 2011, p. 107.

[488] Email from Brian Swetland to Mathias Agopian et al, January 2, 2006, GOOGLE-01-00019511 –513 at 512.

[489] Deposition of Anwar Ghuloum, dated December 9, 2015, p. 114.

[490] Deposition of Hasan Rizvi, dated July 28, 2011, p. 211.

[491] Deposition of Hasan Rizvi, dated July 28, 2011, p. 239.

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that programming language. There were already a number of good open source libraries written in the programming language.

So there's the social aspect, per se, that there were already developers who understood the Java programming language, could write in it, but also who were actively producing open source software. . .

I think the other main candidates were JavaScript and C++. . .

[B]etween Java and C++, it was what I would say is that C++ can be a little more troublesome in some circumstances. In terms of JavaScript versus Java, say, it was much less clear-cut. . . .

I had had a reasonably positive experience using Java as the programming language for Danger."[492]

235.   In an April 2006 message to Android engineers from Mr. Andy McFadden, engineers were instructed to code in the Java programming language because "[w]e will ship a more stable product sooner if we do as much as possible in Java."[493] Mr. McFadden instructed that "[i]f there's a simple, built-in Java way of doing things that works the way Java developers expect, favor that over inventing a new approach."[494]

236.   Developers do, of course, have the option of developing in non-Java code;[495] however Java is still the most widely used programming language. Additionally, although support exists for other types of input files, in practice no other source files are currently supported. Thus, although Android could theoretically support alternatives that do not include Java, I am unaware of any commercially practical steps taken by Google to move in that direction.

237.   Google's business records likewise evidence the lack of available acceptable alternatives. In an October 2005 e-mail, Mr. Rubin outlined the following options following "discussions with Sun regarding Android's Open Source VM strategy":

> *"If Sun doesn't want to work with us, we have two options: 1) Abandon our work and adopt MSFT CLR VM and C# language – or – 2) Do Java anyway and defend our decision, perhaps making enemies along the way."[496]*

238.   Almost five years later Google was still without a commercially acceptable alternative, as in August 2010 Mr. Rubin received an internal email stating that the technical alternatives to using

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[492] Deposition of Daniel Bornstein, dated May 16, 2011, pp. 48-50.

[493] Email from Andy McFadden to Dianne Hackborn and Android Engineering, April 4, 2006, GOOGLE-01-00075935 – 936 at 935.

[494] Email from Andy McFadden to Dianne Hackborn and Android Engineering, April 4, 2006, GOOGLE-01-00075935 – 936 at 935.

[495] Android Developers Reference Forum, http://developer.android.com/tools/sdk/ndk/index.html.

[496] GOOGLE-01-00019527 - 528 at 528.

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Java for Android "all suck" and concluding, "we need to negotiate a license for Java under the terms we need."[497]

Android's Technical Dependence on the Infringed Java Copyrights

239.   Once Google had decided on Java as its solution, according to the expert report of Chris F. Kemerer, Ph.D. ("the Kemerer Report"), and the Zeidman Report, collectively (the "Technical Reports") the Infringed Java Copyrights exist within the Android. As described in the Technical Reports, the importance and dependence on the Java Copyrights within the Android platform have been tested and proven as follows:

  ✓   Android does not compile without the Infringed Java Copyrights[498]

  ✓   Every one of the Top 100 Apps depends on one or more of the 37 API packages. The average number of dependencies is 11.5. One of the top apps relies on as many as 23 of the 37 copied APIs. [499]

  ✓   If the analysis is restricted to the most popular of the 100 apps, the ones that have between 1 billion and 5 billion downloads, those apps generally have even more dependencies upon the 37 copied APIs, with the minimum number of dependencies being eight, the average number 13.8, and the maximum number 17. [500] Some examples of the popular app downloads that rely significantly on the Infringed Java Copyrights include Google Play Music, Games, Chrome, YouTube, Maps and Gmail.

  ✓   The 37 APIs are many more times more significant to the Android platform using a centrality analysis called PageRank (invented by and named after one of Google's founders Larry Page) than the other APIs it utilizes.[501]

These analyses included in the Technical Reports illustrate the importance and centrality of the Infringed Java Copyrights to the operation and success of Android.

240.   Google business records indicate that a Google objective relating to the incorporation of the Infringed Java Copyrights into the Android platform was to ensure and increase the ability of Java programmers to easily transition to Android App development.[502]

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[497] Trial Exhibit 10 – GOOGLE-12-10000022; GOOGLE-12-00039565; Deposition of Tim Lindholm, September 7, 2011, p. 78.

[498] Expert Report of Prof. Douglas C. Schmidt, January 8, 2016, p. 10.

[499] Expert Report of Chris F. Kemerer, January 8, 2016, p. 41.

[500] Expert Report of Chris F. Kemerer, January 8, 2016, p. 41.

[501] Expert Report of Chris F. Kemerer, January 8, 2016, pp. 43-45.

[502] Trial Exhibit 158 - GOOGLE-01-00025575 – 587 at 584.

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The Impact of the Infringed Java Copyrights on Google's Market Opportunity

241.   The Infringed Java Copyrights were essential for Google to establish Android in the wake of
Apple's market entry and intense competitive pressure from Facebook. The rapid growth of the
wireless industry and the infrastructure for significant mobile data bandwidth marked the
widespread adoption of mobile devices and a fundamental and permanent shift from desktop to
mobile internet access. The resultant window of opportunity would not have been available to
Google without the marketplace business advantages provided by the Infringed Java
Copyrights. Google recognized that it had to exploit this unique timing window in order to
avoid having its services excluded by others from their platforms. All of Google's top executives
agreed that one of their chief objectives for Android was to ensure control over a platform and
to avoid the significant threat of such exclusion.[503] Google felt intense time pressure to get
Android to market.[504] The stability and maturity of the existing Java API and its built-in
developer base made it the only commercially viable choice for Google to reach its defined target
timing window, in order to ensure the continued viability of its core search services on the
mobile platform, and eventually every platform.

242.   Given the above and other record evidence in this case, it is my opinion that a significant portion
of the revenue Google has realized through the Android platform is causally connected to the
Infringed Java Copyrights. The Android platform cannot exist without and disproportionately
relies upon the Infringed Java Copyrights; in addition, the Infringed Java Copyrights were the
only available option to succeed in the time window that Google required. Google's mobile
strategy depended on the Android platform, and that platform depended upon the Infringed Java
Copyrights. Google would not have earned tens of billions of dollars of Android revenue
without the Android platform. In my opinion, Google's Android revenue is attributable in
significant part to the Infringed Java Copyrights.

243.   That Google has realized revenue because of the platform (and thus the Infringed Java
Copyrights) is supported by the following slide taken from a Google Quarterly Review
presentation to the Android Operating Committee which states that Android "spreads value" by
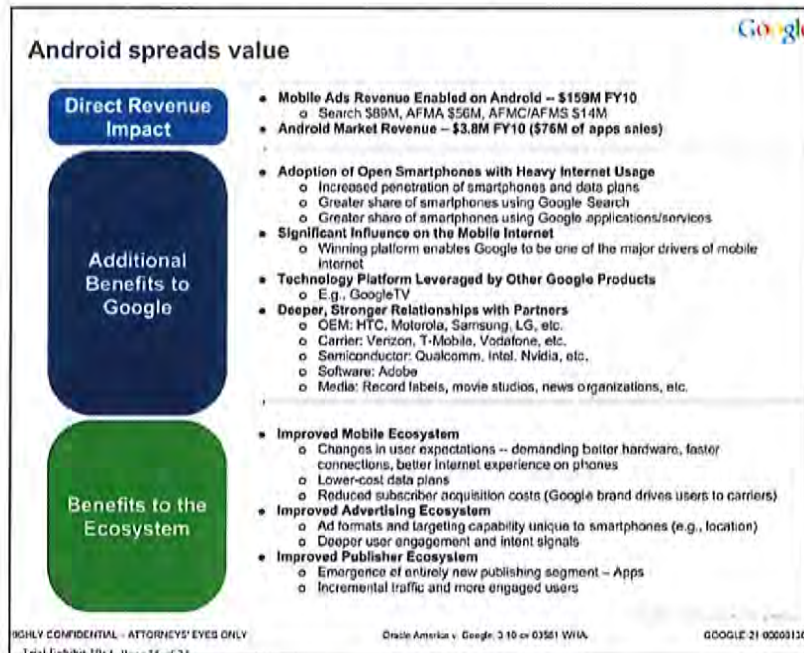having a "direct revenue impact."[505]

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[503] GOOGLE-01-00056184 – 187 at 187; GOOGLE-22-00171914 – 951 at 923.
[504] OAGOOGLE0004936380 – 436 at 404.
[505] GOOGLE-21-00008118 – 139 at 130; GOOGLE-21-00008116 – 117.

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Figure 29

Google Internal Presentation[506]

244.   As discussed previously, I have specifically identified revenues derived by Google through the sale of hardware, apps, digital content and advertising to have a causal connection to the Infringed Java Copyrights. In the sections that follow, I provide my opinions regarding the causal connection of each of those revenue sources to the Infringed Java Copyrights.

11.1.2   Causal Nexus to Device Revenue

245.   Nexus is the brand name of Google's smartphones and tablets. Nexus smartphones are sold directly to consumers. The first Nexus device was the Nexus One mobile phone (co-developed with HTC), launched in January 2010. Google's Nexus business strategy has centered around ensuring a current and competitive Android device was available in the market.[507] The Nexus program has traditionally served as a way for Google to provide reference devices with the latest version of its software to developers.[508] Starting with the 2012 introduction of the Nexus 4,

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[506] GOOGLE-21-00008118 – 139 at 130.
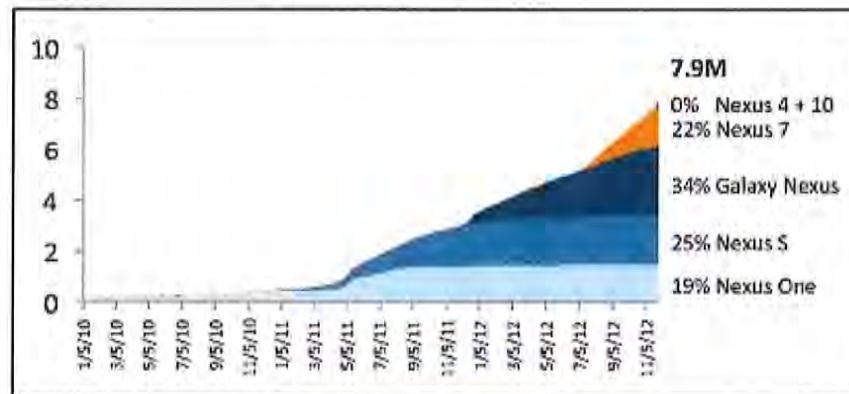
[507] GOOG-01-00053552 – 591 at 558.

[508] "Not just for phone nerds: Google calls Nexus 5 a sales winner," The Verge, January 30, 2014.

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Google has also used it as a way to make high-end devices more accessible, by pricing them far below competing devices.[509]

246.   From a marketing perspective, Google's strategic theme was to establish "pure Google" as a viable line of Nexus devices.[510] Google priced Nexus devices just above its own costs in order to maximize unit sales and distribution. Google also introduced a Nexus 10-inch tablet in 2012. UBS Securities estimated that the Nexus tablet was the biggest contributor to Nexus-related revenues, and comprised 10 percent of all Android tablet activations as of July 2013.[511]

247.   Google business records indicate that an Android-related business objective has been the generation of revenue via the sale of hardware devices.

-   **The Q1 2011 Android OC Report**: Indicates that Google realized $115.2 million from sales of Nexus devices during 2010.[512]

-   **Google 2012 Mobile Update**: A November 2012 Mobile Update report by Mr. Rubin indicates that 2012 was "Mobile's biggest year yet." According to this report, during 2012, 1.7 million Nexus 7s were activated.[513] By November 2012, a cumulative total of 7.9 million Nexus devices had been activated. **Figure 30** below illustrates Nexus activations by model from January 2010 to November 2012.

Figure 30

Activated Nexus Devices[514]

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[509] "Not just for phone nerds: Google calls Nexus 5 a sales winner," The Verge, January 30, 2014.
[510] GOOG-77-00053552 – 591 at 583.
[511] Key Call: Google Inc. – The Innovation Leader; UBS Securities LLC., p. 12.
[512] GOOG-01-00053555 – 575 at 562.
[513] GOOG-00132218 – 244 at 220.
[514] GOOG-00132218 – 244 at 225.

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248.   Given this and the other record evidence, it is my opinion that Google realized revenue from the sale of Android-related hardware that is attributable to the Infringed Java Copyrights.

11.1.3   Causal Nexus to Application and Content Revenue

Application Revenue

249.   The three categories of Android applications discussed in the following sections include: 1) Android Specific Applications; 2) Google Applications; and 3) Third Party Apps available through Android Market/Google Play.

11.1.3.1 Android Specific Applications

Figure 31

Android Specific Applications[515]

11.1.3.2 Google Applications

250.

Figure 32

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11.1.3.3 Third Party Android Market/Google Play Apps

251.   Google created a market for over-the-air downloads for free and premium third-party Apps. The market was originally referred to as Android Market, and is now known as Google Play. Through this market, Apps developed by registered developers may be downloaded to Android-powered devices. Third-party Android Market/Google Play applications are those applications distributed through Google Play in accordance with Developer Distribution Agreements, and made available to users of Android devices.[517]

252.   Android Market/Google Play was launched in March of 2012, to create a more comprehensive source for music, movies, Apps, and e-books.[518] Google's 2013 Form 10-K states, *"Google Play is an entirely cloud-based, digital entertainment store with more than a million apps and games plus millions of songs and books and thousands of movies that our users can find, enjoy and share on their computer, phone or tablet."*[519] In connection with the launch of Android Market, Google saw an increase in "Other Revenue" from 2012 to 2013 of $2.6 billion, and stated *"[t]he increase was primarily due to growth of our digital content products, such as apps, music, and movies."*[520] From 2013 to 2014, Google's "Other Revenue" again increased by $2.0 billion *"primarily due to growth of our sales of digital content products, such as apps, music, and movies on the Google Play store."*[521]

253.   According to a July 2015 Trefis analyst report:

> *"The Google phone division makes up 10.5% of its estimated value. Considering the growth of Google's Android platform and the growth in smartphone adoption globally, Google's Play store is fast becoming a vital cog for Google's growth in the coming years. Google Play is also connecting developers and content providers with more than 1 billion people on Android devices around the world. Developers are building thriving businesses in this platform, and in February, Google announced that over the past 12 months (FY 2014), it paid more than $7 billion to developers."*[522]

254.   Apps play a major role in winning customer loyalty.[523] "Exclusivity of applications and the ability to build an extensive personal collection will drive customer loyalty to the device platform since repurchasing and/or porting apps and content collections to another OS will be perceived as time-consuming and expensive by users."[524] Further, a platform's App store "is tightly linked

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[517] GOOGLE-03169550 – 603 at 556.

[518] http://www.cnet.com/news/google-reboots-android-market-launches-google-play/.

[519] Google 2013 Form 10-K, p. 3.

[520] Google 2014 Form 10-K, p. 24.

[521] Google 2014 Form 10-K, p. 24.

[522] Trefis Analyst Report, "Google Earnings: Profits Soars as the Company Reins in Cost," July 17, 2015.

[523] Google Launches Android Market, http://www.techhive.com/article/152613/google_android_ships.html.

[524] Do App Stores Impact Wireless Device Sales?, October 18, 2010, https://www.strategyanalytics.com/strategy-analytics/blogs/media-services/media-services-ux/media-and-services-ux/2010/10/18/do-app-stores-impact-wireless-device-sales-#.Vh0dY_IVhBc.

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with the explosion of smartphone penetration and usage by consumers worldwide."[525] For
Google, this is key since having more users who have the exposure to, and ability to use their
products, such as Google Search, generates more revenue for Google through their core
business of advertising,[526] in addition to generating a portion of revenue from App sales.[527]

255. Android Market was a critical part of Google's Android strategy at the time of launch.[528]
However, in order for Android Market to be successful, and to compete with the iPhone App
Store, Google believed it would need a *"strong network of partners distributing Market on devices,"* and
would need to ███
███████████████████████████████[529] As mentioned previously, Android Market provided
Google with the following benefits:

- It ensure[d] an open application ecosystem without the traditional barriers to entry
  or distribution, maximizing the return on investment for developers

- It is a carrot for handset manufacturers to be Android-compatible

- It helped ensure Google could get Apps out to mobile users[530]

256. In 2014, Google reported ███████████ in App Revenue generated through the Android platform,
which is a ████████████ over 2013 App Revenue, and a ████████████ compound annual
growth rate from 2009, when Google first began recording Android-related App Revenue.[531]

257. There have been more than 100 billion Apps downloaded for Android devices.[532] In Q2 2013
Google announced in its Earnings Call that "[m]ore than 50 billion apps have been downloaded
so far."[533] **Figure 33** reflects cumulative App downloads as of certain months from August 2010
to July 2013 which supports the representation made during the Q2 2013 Earnings Call
concerning the 50 billion Apps that had been downloaded as of that time. Further in 2014,
"Google saw over 50 billion installs."[534]

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[525] The Rise of Mobile Application Stores *Gateways to the World of Apps*, Booz & Co., p. 2.

[526] Deposition of Andrew Rubin, August 18, 2011, pp. 74-76; 2013 Q1 Earnings Call (Google Play was "fundamental
to the success of the Android ecosystem"), at p.2.

[527] Android Strategy and Partnerships Overview, June 2009, GOOGLE-22-00060007 – 044 at 030.

[528] Android Market Setup for Partner Rev-Share, PSO Android Team, GOOGLE-00302808 – 811 at 808.

[529] Android Market Setup for Partner Rev-Share, PSO Android Team, GOOGLE-00302808 – 811 at 808.

[530] Android Market Setup for Partner Rev-Share, PSO Android Team, GOOGLE-00302808 – 811 at 808.
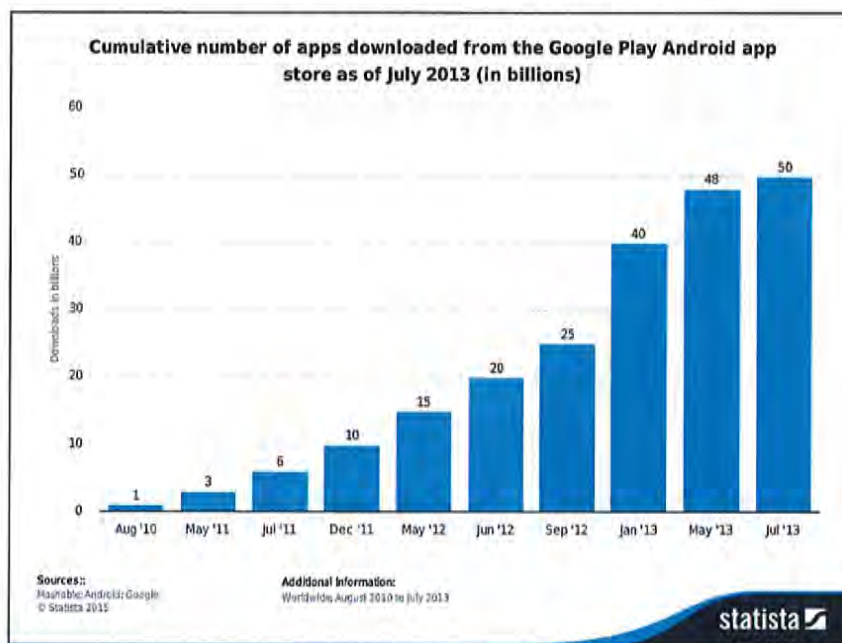
[531] Exhibit 8.

[532] http://www.statista.com/statistics/281106/number-of-android-app-downloads-from-google-play; Google Play
sees more than 50 billion installs in the past year, over one billion active users, May 28, 2015,
http://www.androidcentral.com/google-play-sees-more-50-billion-installs-past-year-over-one-billion-active-users.

[533] Google Inc (GOOG) CEO Discusses Q2 2013 Results – Earnings Call Transcript, July 18, 2013,
http://seekingalpha.com/article/1557292-google-inc-goog-ceo-discusses-q2-2013-resuts-earnings-call-transcript.

[534] Google Play sees more than 50 billion installs in the past year, over one billion active users, May 28, 2015,
http://www.androidcentral.com/google-play-sees-more-50-billion-installs-past-year-over-one-billion-active-users.

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Figure 33

Cumulative Google Play Downloads[535]

Cumulative number of apps downloaded from the Google Play Android app store as of July 2013 (in billions)

258. As reflected in the following Google business records, an Android business objective has clearly been the generation of revenue via the sale of Apps through Android Market/Google Play.

- **The Q1 2009 Android OC Report:** Within a few months of the first Android device sale, Google reported on its Android Market (Google Play) statistics. According to a Google business record, during the first quarter of 2009, Android Market was experiencing 2,000 Software Development Kit downloads per day. There were 11,000 developers with 2,700 Apps, and 43 million Apps had been downloaded with 85 percent of users downloading a minimum of one App.[536]

- **The Q4 2010 Android OC Report:** Two years after the first sale of an Android device, Google reported that 89,000 Apps were available for download from Android Market/Google Play, of which 33,000 were paid Apps.[537] As of October 2010, Google projected annual App Gross Revenue for both Android phones and tablets as reflected in **Figure 34** below.

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[535] http://www.statista.com/statistics/281106/number-of-android-app-downloads-from-google-play/
[536] GOOGLE-00303725 – 756 at 745.
[537] GOOGLE-00395207 – 248 at 210.

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Figure 34

Projected Annual App Revenue[538]

Projected App Revenues	2010	2011	2012	2013
Gross Revenue - Phones	$50.6	$214.6	$638.3	$1,706.7
Gross Revenue - Tablets	0.0	31.3	175.1	552.7
Total	$50.6	$245.9	$813.4	$2,259.4

This document asks the question: "If we gave it away, how can we ensure we get to benefit from it?" One of the responses to this question concerns the importance of Apps to Android, and states "[w]e created the first app store for Android and it got critical mass quickly. The store now has value and partners want access to it because of the number of apps available."[539]

- **The Q1 2011 Android OC Report:** By March 2011, the number of free Apps in Android Market had increased to about 117,500, and the number of paid Apps in Android Market had increased to about 74,500.[540]

- **Google May 2015 Introduction to Android:** According to an Android Profit and Loss statement, App Revenue was ▮▮▮▮▮ in 2013, was ▮▮▮▮▮ in 2014, and was expected to be ▮▮▮▮ in 2015.[541]

259.   Given this and the other record evidence in this case, it is my opinion that the revenue Google realized from the sale of Apps through Android Market/Google Play is attributable to the Infringed Java Copyrights.

Digital Content Revenue

260.   Digital Content sold through the Google Play Store has included the aforementioned Apps, music and movies.[542] According to the Q4 2010 Android OC Report, the introduction through Google Play of "New Monetizable Services" such as downloadable Music and "Other Digital Content," was part of Phase 3 (2011 to 2013) of the Android platform strategy.[543] Google projected that downloadable music alone would generate total gross revenue of $1.5 – $3.0 billion by 2013.[544] According to the May 2015 Introduction to Android presentation, Google

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[538] GOOGLE-00395207 – 248 at 243.

[539] Google Android Operating Committee Quarterly Review – Q4 2010, GOOGLE-01-00053552 – 591 at 563.

[540] Google Android Operating Committee Quarterly Review – Q1 2011, GOOGLE-77-00053555 – 575 at 560.

[541] Google Introduction to Android May 2015; GOOG-00130338 – 386 at 339 and 342.

[542] Google 2014 Form 10-K, p. 24.

[543] GOOGLE-01-00053552 – 591 at 567.

[544] GOOGLE-01-00053552 – 591 at 569.

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reported ▮▮▮▮ of Digital Content Revenue in 2013, ▮▮▮▮ of Digital Content Revenue in 2014, and ▮▮▮▮ of planned Digital Content Revenue in 2015.[545]

261.   As reflected in the following Google business records, one of Google's Android business objectives has been to generate revenue via the sale of Digital Content through Android Market/Google Play.

- **Mobile Update – 2012 Review:** According to Mr. Rubin's 2012 Review for Google's mobile business, Google Play experienced "[c]onstant growth driven by vertical and country expansion." **Figure 35** below illustrates annual run rates for Digital Content from December 2011 to November 2012 for books, music, videos, and magazines downloaded through the Google Play store.[546]

Figure 35

Android Digital Content Revenues[547]
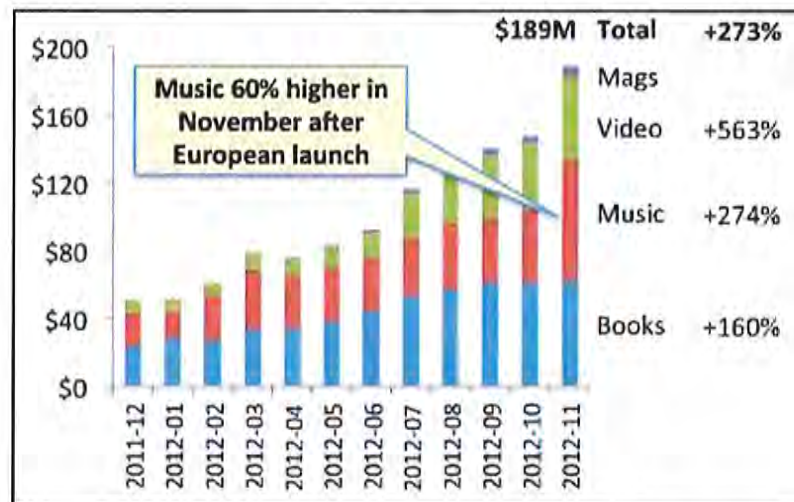
- **May 2015 Introduction to Android Presentation:** According to a May 2015 Google internal presentation, more than 680 million unique users downloaded something from Google Play in the 30 day period ending May 26, 2015.[548]

- **April 2015 Forbes Article:** According to an April 2015 Forbes article, *"[c]onsidering the growth of Google's Android platform and the growth in smartphones adoption across the globe, Google's Play store is fast becoming a vital cog for Google's growth in the coming years. . . . We*

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[545] GOOG-00130338 – 386 at 342.
[546] GOOG-00132218 – 244 at 223.
[547] GOOG-00132218 – 244 at 223.
[548] GOOG-00130338 – 386 at 346.

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believe that Google will be able to leverage popularity of Android platform to boost its revenues. Currently, we forecast digital content revenue to grow to $8.51 billion by the end of our forecast period."[549]

262.   Given this and the other record evidence in this case, it is my opinion that the revenue Google realized from the sale of Digital Content through Android Market/Google Play is attributable to the Infringed Java Copyrights.

11.1.4   Causal Nexus to Advertising Revenues

263.   Google realized Ad Revenues totaling ▮▮▮▮▮▮ from Android devices from 2008 through 2015.[550] From the outset, Google articulated that its purpose for building the Android platform and getting it to market when it did was to be able to achieve this market opportunity. As Mr. Schmidt testified "The vast majority of Google's revenue at the time and today comes from search revenue. And so the primary reason to have something like Android is that people will do more searches, and then we'll get more money as a result. And that's how we, essentially, pay for the strategy of Android."[551] According to an April 2015 Forbes article, Google's mobile Ads division is the second largest division within Google, and makes up approximately 32 percent of Google's total value.[552] **Figure 36** below illustrates the quarterly growth of worldwide Android-related Ad Revenue as reported by Google for the period January 1, 2012 through June 30, 2015. As **Figure 36** illustrates, Google reported Android Ad Revenue of less than $500 million for Q1 2012. However, due to the substantial growth in the number of active Android users during this time period, by Q2 2015, Google's quarterly Ad Revenue generated from Android devices increased to ▮▮▮▮▮▮▮.

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[549] "Google Earnings Preview: Will Advertising Revenue Grow?," Forbes, April 22, 2015. http://www.forbes.com /sites/greatspeculations/2015/04/22/google-earnings-preview-will-advertising-revenue-grow/
[550] Exhibit 8.1.
[551] Eric Schmidt Trial Testimony, April 24, 2013 at 1458.
[552] "Google Earnings Preview: Will Advertising Revenue Grow?," Forbes, April 22, 2015. http://www.forbes.com /sites/greatspeculations/2015/04/22/google-earnings-preview-will-advertising-revenue-grow/

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Figure 36

Quarterly Android Ad Revenue and Android 30-Day Actives[553]

264. In addition to the graphically represented information reflected in **Figure 36**, I have also performed a regression analysis of Android 30-Day Actives to Android Ad Revenue. The analysis resulted in an R-Squared value of 99.4 percent which suggests a strong relationship between Android 30-Day Actives (i.e. the number of people who had an Android phone in service in the last 30 days) and Android Ad Revenue. I believe that such a conclusion is consistent with the information reflected in **Figure 36**.

265. Google offers its advertising clients three advertising programs: AdWords, AdSense and Display. These programs are offered for Internet browsing performed from both desktop computers and mobile devices. The following subsections describe these advertising programs through which Google realized advertising revenues via Internet searches from Android devices.

11.1.4.1 Google AdWords

266. According to Google's 2014 Form 10-K, AdWords is its primary auction-based advertising program for performance advertisers.[554] Google performance advertisers pay on a cost-per-engagement basis, as when a user engages in their ads.[555] AdWords "helps create simple text-based ads that appear on Google websites."[556]

267. Performance advertisers bid on certain keywords in order for their clickable ads to appear in Google's search engine results pages. Since performance advertisers pay "per-click," this is how Google makes money from its search function. Google's advertising clients have to bid against other marketers for how much they are willing to pay Google every time a user clicks on their

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[553] GOOG-00022382 and GOOG-00022386.

[554] Google 2014 Form 10-K, p. 3.

[555] Google 2014 Form 10-K, p. 3.

[556] Google 2014 Form 10-K, p. 3.

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ads. The more an advertiser is willing to pay, the more likely their ad will appear in the search results. ███████████████████████.[557]

11.1.4.2 Google AdSense

268.   AdSense refers to the online programs through which Google distributes Ads on the websites of Google Network Members.[558] It is a performance-based advertising program which means that advertisers pay Google on a per-click basis. Performance advertisers bid for ad space on the websites of Google Network Members, and the highest bidders get to place ads on the Google Network Partners' websites.[559]

269.   Google has several product offerings under the AdSense advertising program. AdSense for Content displays advertisements alongside the existing online content on the website. AdSense for Search[560] provides for a custom search engine on the publisher's website to provide users with search capabilities. Under this product offering, the publisher can specify what content users search for by filtering where results are fetched from: publisher's website only, a collection of publisher-approved sites, or the entire web.[561]

11.1.4.3 Google Display

270.   Google Display is Google's non-performance based advertising program through which advertisers pay Google on a cost-per-impression basis.[562] This enables Google brand advertisers to pay Google based on the number of times their ads display on Google websites and Google Network Members' websites as specified by the advertisers.[563]

271.   Google's principal business objective with respect to Android has been the generation of mobile Ad Revenue. This is evidenced by Google's business records and deposition testimony, as well as statements by Google executives, court appointed experts, and third-party researchers. Examples of such evidence are provided in the sections that follow.

Google Business Records

▪   **July 2005 Tim Lindholm email regarding "Android notes":** States that, with respect to Android, "Google's goal in this would be to create more mobile page views, from more compelling content, which will create more ad views. It's making a bigger, tastier pie."[564]

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[557] See Exhibit 8.1.

[558] Google 2014 Form 10-K, p. 49.

[559] https://www.google.com/adsense/start/how-it-works.html.

[560] Also referred to as "Google Custom Search."

[561] https://support.google.com/adsense/answer/9879?hl=en&topic=1705820.

[562] Deposition of Jonathan Gold, December 11, 2015, p. 93.

[563] Google 2014 Form 10-K, p. 49.

[564] GOOGLE-12-00000115.

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- **August 2005 Alan Eustace Operating Plan:** States that, in 2005, Google was "facing a repeat in history, only the stakes are higher: In 2004 there were only 178M personal computers sold. During the same period, there were 657M handsets sold. The almost 4x market size is a huge motivator for OS companies like Symbian and Microsoft to enter the market. While most new handsets are capable of connecting to the Internet . . ."[565] "The Android solution 'changes the game' by offering each stakeholder a significant advantage in core areas of their business, while streamlining the delivery of enhanced services that are important to Google."[566]

- **January 2006 Internal Google Correspondence:** Google internally discussed a possible co-development partnership with Sun under which Java technology would become an open-source part of the Android platform. The deal was projected to cost Google 25-50 million dollars, plus a negotiable share of revenue from "platform-enabled mobile ads."[567]

- **Android Operating Committee Q1 2009 Quarterly Review ("the Q1 2009 Android OC Report"):** Indicates that "Search + Android = Huge."[568] According to this report, "[n]early 100% of our users have searched in the last 30 days. . . . 70% of all searches are initiated from Android search framework, rather than Google.com website."[569] According to the Q1 2009 Android OC Report, Search widget and browser search box drove 80 percent of Android revenue.[570]

- **Android Operating Committee Q4 2010 Quarterly Review ("the Q4 2010 Android OC Report"):** Identifies as a "Highlight" of the Android platform, a $155 million per year run rate for Search and Ad Revenue.[571] According to the Q4 2010 Android OC Report, the Android platform experienced "[s]trong revenue growth due to increase in the number of Android devices . . . Android continues to be the #2 contributor to Google mobile ads revenues."[572] Google forecasted Android Ad Revenue to be $114.2 million in 2010. At that time, Google predicted the Android platform would be the "#1" contributor to Google mobile ad revenue by 2012.[573]

272.   The Q4 2010 Android OC Report indicates that "Android created a hardware and services ecosystem worth over $43B a year. . . . Our apps and ads services have made this [] possible, and

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[565] GOOG-00580946 – 991 at 961.

[566] GOOG-00580946 – 991 at 962.

[567] GOOGLE-14-00042244-254 at 248.

[568] Google Android Operating Committee Quarterly Review – Q1 2009, GOOGLE-00303725 – 756 at 731.

[569] Google Android Operating Committee Quarterly Review – Q1 2009, GOOGLE-00303725 – 756 at 731.

[570] Google Android Operating Committee Quarterly Review – Q1 2009, GOOGLE-00303725 – 756 at 739.

[571] Google Android Operating Committee Quarterly Review – Q4 2010, GOOGLE-01-00053552 – 591 at 555.

[572] Google Android Operating Committee Quarterly Review – Q4 2010, GOOGLE-01-00053552 – 591 at 556.

[573] Google Android Operating Committee Quarterly Review – Q4 2010, GOOGLE-01-00053552 – 591 at 556.

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work to protect our position."[574] At the time the Q4 2010 Android OC Report was prepared, Google considered the "Android Strategy" to be at the beginning of "Phase 2" – entitled "Extend Our Core Business." According to this report, at this time, Google considered its "Core Business" to be Search, Ads and Apps.[575] Google forecasted that Android Ad Revenue would be realized through both smartphones and tablets in the total annual amounts reflected in **Figure 37** below.

Figure 37

Forecasted Android Advertising Revenue as of October 2010 (*in millions*)[576]

Projected Ad Revenue	2010	2011	2012	2013
Smartphones	$115.0	$323.8	$541.6	$766.7
Tablets	0.0	94.3	297.1	496.6
Total	$115.0	$418.1	$838.7	$1,263.3

▪ **Android Operating Committee Q1 2011 Quarterly Review ("the Q1 2011 Android OC Report"):** Lists as a "Highlight" the fact that Android Ad Revenue run-rate passed all other high-end phone platforms in the United Stated on January 25, 2011, and in Japan on March 30, 2011.[577] Google reported Android Ad Revenue of $120.1 million in 2010, and forecasted annual Android Ad Revenue as reflected in **Figure 38** below.[578]

Figure 38

Forecasted Android Advertising Revenue as of May 2011 (*in millions*)[579]

	2010	2011	2012	2013
Projected Ad Revenue	-	$528.4	$1,083.8	$1,715.8

273.   The Android Operating Committee in Quarterly Review reports comment as follows.

▪ **Android 2011 Actual Quarterly Profit and Loss Statements:** An internal Google Android 2011 Profit and Loss statement reports Ad Revenue of $569.0 million, representing more than 90 percent of 2011 total Android-related revenues.[580]

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[574] Google Android Operating Committee Quarterly Review – Q4 2010, GOOGLE-01-00053552 – 591 at 566.
[575] Google Android Operating Committee Quarterly Review – Q4 2010, GOOGLE-01-00053552 – 591 at 567.
[576] Google Android Operating Committee Quarterly Review – Q4 2010, GOOGLE-01-00053552 – 591 at 585.
[577] Google Android Operating Committee Quarterly Review – Q1 2011, GOOGLE-77-00053555 – 575 at 557.
[578] Google Android Operating Committee Quarterly Review – Q1 2011, GOOGLE-77-00053555 – 575 at 562.
[579] Google Android Operating Committee Quarterly Review – Q4 2010, GOOGLE-77-00053555 – 575 at 562.
[580] GOOG-00132625, Tabs "Final Legal" and "Final – Backup"; $569 / ($569 + $51) = 91.8 percent.

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- **July 2011 Mobile Display Ads Manifesto:** According to Google, it was:

  sitting on one of the biggest commercial opportunities in the world. Smartphones and tablets already outsell *all PCs* (desktops, laptops, smartphones). Publishers and developers are moving en masse to phones and tablets, and ads will be one of the primary ways they will support their apps and content. Advertisers want to reach users wherever they are, and users are spending more and more time on tablets and phones. . . . We have the largest mobile ads network. We have the best ad buying and serving platforms with DFP, DFA, and AdX. As we know display better than anyone. We have Android. We have 2M advertisers, all of whom will be advertising on mobile in a few years. We have the best and biggest online ads sales force in the world.[581]

- **Mobile Update – 2012 Review:** According to Mr. Rubin's 2012 Review Report for Google's mobile business, the continued growth of Search and Ad Revenue was "powered by distribution deals."[582] **Figure 39** below illustrates annual run rates for Ad Revenues from Android devices from October 2011 to October 2012.[583]

Figure 39

Monthly Android-Related Ad Revenues Oct. 2011 to Oct. 2012[584]

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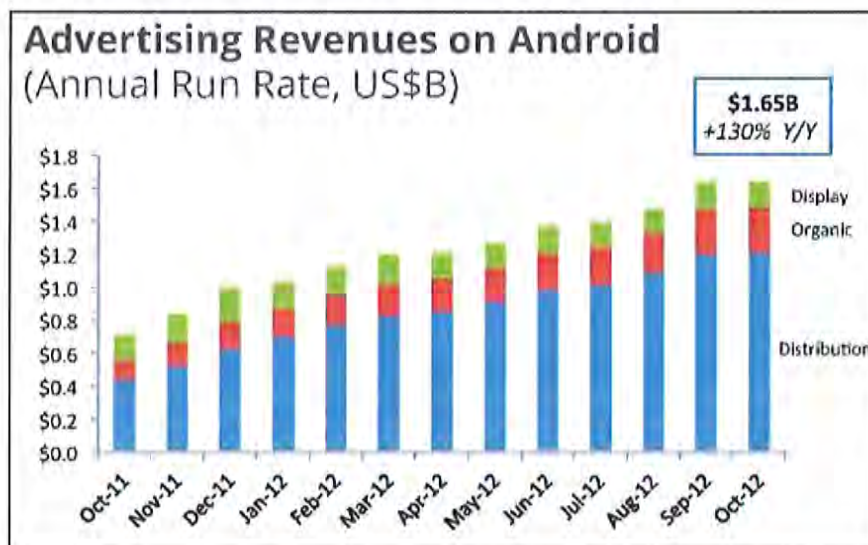
[581] GOOG-00273854 – 874 at 873.
[582] GOOG-00132218 – 244 at 226.
[583] GOOG-00132218 – 244 at 226.
[584] GOOG-00132218 – 244 at 226.

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- **2009 Android Strategy and Partnerships Overview**: According to a June 2009 Google internal presentation by Mr. Brady concerning Google's Android strategy, Android's strategic value to Google was summarized as "Don't get locked out!"[585]

274.   A slide entitled "Android platform and Monetization," indicates that "Android drives revenue through search ads....We enable a full web browser which can render desktop web pages . . . which means we can serve desktop ads."[586]

- **Android Weekly Metrics Summary for March 31, 2013**: A Google report of the weekly operating and financial metrics for Android indicates that Search Revenue was considered part of the Android platform, and represented approximately ▮▮▮▮ of the revenue run rate at that time.[589]

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[585] GOOG-00387553 – 591 at 562.
[586] GOOGLE-22-00060007 – 044 at 017.
[587] GOOGLE-03169550 – 603 at 573 and 576.
[588] GOOGLE-03169550 – 603 at 576.
[589] GOOG-00290796 – 928 at 798.

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Figure 40 [590]

Android Metrics – Week Ending March 31, 2013

- <u>**November 2013 Value of Android User:**</u> - Indicates that as of 2013, ███████████████████

  ████████ .[591] The analysis also summarizes Google's view of the drivers of Android users' value, and includes Search Ads in that definition.[592]

  - <u>**January 2015 Android and Chrome Overview of Economics and Performance:**</u>
    Provides an executive summary of key facts which indicates that "[i]n 2014, Google generated ████████████████████████ channeled through Android devices."[593]

  - <u>**May 2015 Introduction to Android:**</u> According to a May 2015 Google internal presentation, ████████████████████████████

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[590] GOOG-00290796 – 928 at 798.
[591] GOOG-00186877 – 891 at 879.
[592] GOOG-00186877 – 891 at 880.
[593] GOOG-00210248 – 270 at 249.
[594] Google Introduction to Android May 2015; GOOG-00130338 – 386 at 339.

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275.   According to this May 2015 presentation, ███████████ [595]
███████████ [596]

Figure 41

Android Ad Revenue[597]

276.   As **Figure 41** illustrates, monthly Android Ad Revenue[598] ███████████
January 2014, ███████████ by April 2015.

Testimony of Google Representatives and Witnesses

277.   The following testimony from Google representatives and witnesses illustrates that Google's
principal business objective relating to Android has been the generation of mobile Ad Revenue.

   Q.   What was Google's plan for generating profits from Open Source Android?

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[595] Google Introduction to Android May 2015; GOOG-00130338 – 386 at 343.

[596] Google Introduction to Android May 2015; GOOG-00130338 – 386 at 348.

[597] Google Introduction to Android May 2015; GOOG-00130338 – 386 at 348.

[598] Google uses the term "Search Revenue" interchangeably with "Ad Revenue" and "AdWords Revenue."